WHAT IS CLAIMED IS:

1. An annular unitary shim member having first and second opposing surfaces,

wherein the member is made from a carbon material having a debonding coating formed thereon, the member including a plurality of radially extending channels formed on at least one of the first and second surfaces.

2. The member according to claim 1, wherein a plurality of radially extending channels is formed on both of the first and second surfaces.

3. The member according to claim 2, wherein the plurality of channels formed on the first surface is substantially aligned with the plurality of channels formed on the second surface.

4. The member according to claim 2, wherein the plurality of channels formed on the first surface is offset in a circumferential direction from the plurality of channels formed on the second surface.

5. The member according to claim 1, wherein the carbon material is one of a carbon/carbon material and a solid graphite material.

6. The member according to claim 5, wherein the carbon/carbon material comprises one of a needled carbon preform and a woven carbon fabric laminate.

7. The member according to claim 1, wherein the debonding coating comprises a first layer of $MoSi_2$ formed on

the carbon material, and a second layer of Al_2O_3 formed on the first layer of $MoSi_2$.

8. A method of preparing a plurality of annular carbon fiber preforms for a chemical vapor infiltration process, comprising:

stacking the plurality of annular carbon fiber preforms, wherein an annular unitary shim member made from a carbon material is provided between each respective pair of the annular carbon fiber preforms, the stacked plurality of annular carbon fiber preforms and annular unitary shim members collectively defining an interior space within the stack,

wherein each annular unitary shim member has oppositely facing first and second surfaces and a plurality of radially extending channels formed on at least one of said first and second surfaces for communicating the interior space of the stack with an exterior of the stack, each annular unitary shim member being provided with a debonding coating formed thereon for preventing the annular carbon fiber preforms from adhering thereto.

9. The method according to claim 8, wherein each of the first and second surfaces of each annular unitary shim member has a respective plurality of channels formed thereon.

10. The method according to claim 9, wherein the plurality of channels formed on the first surface is substantially aligned with the plurality of channels formed on the second surface.

11. The method according to claim 9, wherein the plurality of channels formed on the first surface is offset in a circumferential direction from the plurality of channels formed on the second surface.

12. The method according to claim 8, wherein the carbon material is one of a carbon/carbon material and a solid graphite material.

13. The method according to claim 12, wherein the carbon/carbon material is one of a needled carbon preform and a woven carbon fabric laminate.

14. The method according to claim 8, wherein the debonding coating comprises a first layer of $MoSi_2$ formed on the carbon material, and a second layer of Al_2O_3 formed on the first layer of $MoSi_2$.

15. A method for manufacturing a unitary annular shim from a carbon material, the method comprising:

forming an annular member from a carbon material, the annular member having first and second opposing faces and a radially extending channel formed on at least one of the first and second opposing faces; and

forming a debonding coating on the annular member

16. The method according to claim 15, wherein forming the debonding coating comprises forming a first layer of $MoSi_2$ on the carbon material, and forming a second layer of Al_2O_3 on the first layer of $MoSi_2$.

17. The method according to claim 16, wherein forming the debonding coating comprises using plasma spraying to form the first layer of $MoSi_2$ on the carbon material and the second layer of Al_2O_3 on the first layer of $MoSi_2$.

18. The method according to claim 15, wherein forming an annular member comprises machining a graphite blank.

19. The method according to claim 15, wherein the carbon material is one of a needled carbon preform and a woven carbon fabric laminate.

20. The method according to claim 8, wherein the provision of the annular unitary shim member made from a carbon material between each respective pair of the annular carbon fiber preforms increases the thermal mass of the stack so as to improve the efficiency of the chemical vapor infiltration process.

21. The method according to claim 8, wherein each annular shim has an outer diameter smaller than an outer diameter of the annular carbon fiber preforms and an inner diameter larger than an inner diameter of the annular carbon fiber preforms.

22. The method according to claim 21, wherein the outer and inner diameters of each annular shim are about 5 mm smaller than and about 5 mm greater than, respectively, the outer and inner diameters of the annular carbon fiber preforms.

23. An annular shim member having first and second opposing surfaces and a plurality of openings formed therethrough,

wherein the member is made from a metallic material and at least partly defines a plurality of radially extending gas flow paths.

24. The member according to claim 23, wherein the metallic material is a bare metallic material.

25. The member according to claim 23, wherein the metallic material is a wire mesh.

26. The member according to claim 25, wherein the metallic material is a refractory material.

27. The member according to claim 25, wherein the metallic member comprises one or more of stainless steel, inconel alloy, titanium, molybdenum, tantalum, and tungsten.

28. The member according to claim 25, wherein the wire mesh has an open mesh area of about 20% to about 80%.

29. The member according to claim 25, wherein the member has an effective thickness of about 1 mm to about 6 mm.

30. The member according to claim 25, wherein the wire mesh includes a crimped weave mesh.

31. The member according to claim 25, wherein the member has an effective thickness of about twice the diameter of the wire constituting the wire mesh.

32. The member according to claim 26, wherein the refractory material can withstand temperatures of up to about 1400°C.

33. A method of preparing a plurality of annular carbon fiber preforms for a chemical vapor infiltration process, comprising:

stacking the plurality of annular carbon fiber preforms, wherein an annular shim member made from a metallic material is provided between each respective pair of the annular carbon fiber preforms, the stacked plurality of annular carbon fiber

preforms and annular shim members collectively defining an interior space within the stack,

wherein each annular shim member has first and second opposing surfaces and at least partly defines a plurality of radially extending gas flow paths for communicating the interior space of the stack with an exterior of the stack.

34. The method according to claim 33, wherein the metallic material is a bare metallic material.

35. The method according to claim 33, wherein the metallic material is a wire mesh.

36. The method according to claim 35, wherein the metallic material is a refractory material.

37. The method according to claim 35, wherein the metallic member comprises one or more of stainless steel, inconel alloy, titanium, molybdenum, tantalum, and tungsten.

38. The method according to claim 35, wherein the wire mesh has an open mesh area of about 20% to about 80%.

39. The method according to claim 35, wherein the member has an effective thickness of about 1 mm to about 6 mm.

40. The method according to claim 35, wherein the wire mesh includes a crimped weave mesh.

41. The method according to claim 35, wherein the member has an effective thickness of about twice the diameter of the wire constituting the wire mesh.

42. The method according to claim 36, wherein the refractory material can withstand temperatures of up to about 1400°C.

43. The method according to claim 33, wherein each annular shim has an outer diameter smaller than an outer diameter of the annular carbon fiber preforms and an inner diameter larger than an inner diameter of the annular carbon fiber preforms.

44. The method according to claim 43, wherein the outer and inner diameters of each annular shim are about 5 mm smaller than and about 5 mm greater than, respectively, the outer and inner diameters of the annular carbon fiber preforms.